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ABSTRACT

With federal funds accounting for only 7% of public elementary and secondary education revenue, funding responsibility for K-12 education is split primarily between state and local governments. Since the 1980s, state governments have generally assumed primary fiscal responsibility, with local governments supplying the rest of the necessary revenue. There is, however, a noticeable variation in the level of funding responsibility across the 50 states. This paper examines the effects of this variation in state funding responsibility, considering the impact of this variation on equity and innovation. The paper also notes the state-house political party dynamics that may play a mediating role in this relationship and considers the effect of funding responsibility on achievement. It addresses two guiding questions: (1) What is the relationship between state funding responsibility and funding disparity, as measured by a set of five different indicators?; and (2) How does state funding responsibility affect a state's willingness to adopt innovative policies such as standards and accountability measures, charter schools, school district takeover, and public school vouchers? In addressing these questions, the paper is organized into five sections: (1) "Introduction"; (2) "Theoretical Background and the Research Base; (3) "Data and Methodology"; (4) "Results"; and (5) "Implications." The paper finds that state fiscal responsibility has served a redistributive function and higher levels of state funding are significantly related to a narrower gap between rich and poor districts, even when using a set of control variables. (Contains 45 references, 24 notes, 17 tables, and 1 figure.) (BT)

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Can the states address equity and innovation? Rethinking the state's fiscal role in public education

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I. INTRODUCTION

With federal funds accounting for only seven percent of public elementary and secondary education revenue, funding responsibility for K-12 education is split primarily between state and local governments. Since the 1980s, state governments have generally assumed primary fiscal responsibility, with local governments supplying the rest of the necessary revenue (Wong 1999). There is, however, noticeable variation in the level of funding responsibility across the fifty states. This paper performs an empirical examination of the effects of this variation in state funding responsibility for K-12 education, considering the impact of this variation on equity and innovation. We also pay attention to the state-house political party dynamics that may play a mediating role in this relationship, and we consider the effect of funding responsibility on achievement.

Rather than add to the traditional "Equity vs. Efficiency" debate, this paper shifts its focus to "Equity vs. Innovation." The paper thus attempts to address two guiding questions: (1) What is the relationship between state funding responsibility and funding disparity, as measured by a set of five different indicators? (2) How does state funding responsibility affect a state's willingness to adopt innovative policies such as standards and accountability measures, charter schools, school district takeover, and public school vouchers? Addressing these questions allows us to see whether or not states can promote equity, while at the same time allowing for innovations in their school systems. In addressing these questions, the paper is organized into five sections.

Following this Introduction, **Section II** presents our Theoretical Background and the Research Base. We discuss the notion of "state funding responsibility," which we define as the percentage of annual K-12 education revenue provided by the state. We also

discuss the states' continued emphasis on equity, the rise of state-led innovations in education, and the intense focus on measurable achievement outcomes.

Section III, Data and Methodology, discusses our data sources and details our methodological approach. To address our guiding questions, we look at the decade of the 1990s. We gather state-level data for equity, innovation, achievement, political dynamics, and a host of important control variables. We collect data across the entire 10 year period, and then section off the decade into two periods. Period 1 covers 1990-94 and Period 2 covers 1995-99. As discussed further under the heading of "Data and Methodology," this approach is appropriate given our data constraints and our assumptions about the educational policy process.

To analyze this data, we employ traditional Ordinary Least Squares (OLS) regression. Because there is significant specification uncertainty in developing our final model for analysis, we also make use of a Bayesian Model Averaging (BMA) approach. The BMA approach allows us to more systematically choose our final set of independent variables. The BMA results also give us more confidence that our empirical findings related to state funding responsibility are not simply the result of a particular OLS model.

Section IV presents the Results of our analysis. We find that state fiscal responsibility has served a "redistributive" function (Peterson, 1981; Wong 1999). Higher levels of state funding are significantly related to a narrower gap between rich and poor districts, even when using a set of control variables. We find this to be true in both periods 1 and 2, and when all the observations are pooled together. This is further confirmed by our BMA analysis, in which state funding responsibility still remains a

significant variable. At the same time, this study does not find a significant relationship between state funding responsibility and innovation.

Section V concludes the paper with a discussion of the Implications of these findings for the state's fiscal role in education. We conclude that the strong, direct relationship between state funding responsibility and equity confirms that state governments are the key actors in improving educational equality. Continued improvements in reducing inequity, therefore, will likely be most effective when states have greater control over K-12 revenue. Also important are our findings that innovation and state funding responsibility are not inversely related. Even states that control large shares of education revenue have been willing to adopt innovative policies such as accountability measures and charter schools. This is consistent with other research on educational innovation that finds the process of policy innovation is affected by leadership and a host of other variables not captured in a measure such as state funding responsibility (Mintrom 2000). Finally, the lack of a significant relationship between state funding responsibility and achievement leaves the door open for debate on whether states should assume a greater fiscal role.

II. Theoretical Background & Research Base

Drive for state-led education innovation

Over the past decade, the fifty U.S. states have taken the lead in addressing issues of equity in their public school systems. School-finance equalization (SFE) schemes have now been introduced in every state (Hoxby 2001). Given this emphasis on equalization, scholars have given much attention to the "equity vs. efficiency" question (e.g. Hoxby

1996). While efficiency is an important trade-off to consider, in this paper we shift our attention to another important development in state educational policy: *state-led innovation*.

State-led educational initiatives have gained prominence across the nation in recent years. Almost all fifty states have now developed accountability frameworks for student achievement, emphasizing standardized tests and grade-level benchmarks. In addition, a growing number of states are passing legislation that allows for more controversial measures such as public school vouchers, charter schools, and provisions for state takeover of under-performing schools and districts.[1]

Public school voucher programs have been implemented in five states and debated in many others. Thirty-seven states and the District of Columbia now have legislation allowing for charter schools and over 2,000 charter schools will be operating in Fall 2001. Twenty-four states allow state takeover of local school districts, permitting state officials to exert authority over a district in the case of "academic bankruptcy" or woefully low-performing schools. School district takeovers have occurred in eighteen states and the District of Columbia. Each of these emerging reforms is unique in that it generates a different magnitude of change to the existing public school system. Four reforms are considered in this paper – accountability, charter schools, vouchers, and school district takeover – because they represent a broad spectrum of reform options.[2]

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[1] For an introduction to these reforms, readers can consult these volumes. *Standards and accountability*: Fuhrman 2001, *Education Week* 2002. *Vouchers*: Peterson and Campbell, eds. (2002), Chubb and Moe (1990).; *Charter schools*: Hassel (1999), Maranto et al. (1999), Finn, et al. (2000). *School district takeover*: Ziebarth (2001), Wong and Shen (2001).

[2] There are also variations within each reform. For instance, accountability frameworks do not look the same and all charter school laws are not equal. We attempt to capture some of this variation with our measures of innovation. While our takeover and voucher measures are 1-0 dichotomous variables, our other measures take into account variations in the specifics of the charter schools and standards/accountability innovation.

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Does more equity mean less innovation?

In light of states' emerging role in introducing new innovations, while continuing their long-standing interest in addressing equity, it is important to know if the states that are addressing equity are also introducing innovations. This is a particularly interesting question for political scientists given that two of the most prominent reforms of the 1990s – charter schools and school vouchers – often became (and remain) politically charged policies.[3]

There is theoretical reason to believe that equity and innovation might not be compatible. Varying levels of state funding responsibility may significantly affect the formation of equity and innovation policies. Improving equity – in the form of per-pupil expenditures and comparable distribution of resources across school districts in the state – is a goal that may require a greater degree of central direction, namely, when state government provides a greater percentage of education revenue (see Peterson 1981). Greater equalization schemes are typically associated with more centralization. With more control over revenue, a state has greater capacity to "redistribute" funds from wealthier districts to their less affluent counterparts. If the funds are generated and controlled primarily by local governments, however, the state cannot play as strong a redistributive role.

While greater state funding responsibility may be likely to promote resource equity, it might make innovation more difficult. Charter schools, for instance, are

[3] The recent American Federation of Teachers (2002) report on Charter Schools, in which the AFT found charters not to live up to their promise, suggests that charter schools may remain a politically delicate issue.

premised on local control and autonomy (Nathan 1996; Finn, Manno, & Vanourek 2000). With greater state direction on the use of funding, individual districts might enjoy less discretion to innovate. Further, states may be hesitant to fund educational experiments in one district, fearing that other districts may also demand the same level of resources.

This paper examines the relationship between state educational equity and innovation by considering the relationship of each to "state funding responsibility," which can be defined as the percentage of annual K-12 education revenue provided by the state.[4] This percentage is determined using data from the U.S. Department of Education's National Center for Education Statistics (NCES), which makes available the annual amount of each state's revenue that comes from state, local, federal, and other sources. Underlying our focus on state funding responsibility is the assumption that it is an important component of the political and power dynamics that shape the formation of education policy. Put simply, we assume that the larger a state's share in the K-12 education "pie," the more influence that state will have each year in determining how that pie will be divided (equity) and what ingredients will be used (innovation). We also recognize that politics in the statehouse play a crucial role in determining fiscal decisions. To account for this, we incorporate a series of variables to measure the state's political climate.

Variations in state funding responsibility

Before exploring the relationship between state funding responsibility, equity, and innovation, it is useful to see what variation exists in funding responsibility. States have maintained relatively constant levels of funding responsibility over the past decade

[4] An alternative to this approach might be to look directly at the relationship between the equity and innovation indicators. Bi-variate correlations between the two sets of indicators, however, produced no significant results.

(Table 1). The average percentage of elementary and secondary revenue provided by states is approximately 49%, but there is much variation to be noted. In Table 1, the fifty states are assigned into five groups, according to the level of funding responsibility. These groups are labeled "High, Mid-to-High, Mid, Low-to-Mid, and Low" Responsibility states. At the extremes are Hawaii, in which almost 90% of elementary and secondary school revenue is provided by the state, and New Hampshire, where less than 10% of revenue comes from the state during the 1990s.[5] The ten states with the highest funding responsibility, on the average, account for nearly two-thirds of annual education revenue, while states with low funding responsibility supply only one-third of the state's education budget.

Measuring equity

Arguably the most important step in conducting an analysis of educational equity and innovation is determining measures of these two complicated concepts. How does one quantify "equity" or "innovation"? While there is not an easy answer to this question, we turn to several recent studies that have grappled with the same issue and developed a diverse set of equity and innovation indicators. Two recent NCES reports have addressed equity both within and across states (U.S. DOE 1999, 1998b). We draw on these reports in selecting a set of five equity indicators to use in our analysis. [6]

One set of measures focused broadly on intra-state inequity, i.e. inequity between different districts in a given state. Some intra-state measures focus on the gap between the richest and poorest districts, while others look at the level of variation amongst the

[5] Hawaii is a special case because it has only one school district. Hawaii is not included in analysis of intra-state equity (i.e. between districts) due to this feature of its public education system.
[6] Each of these reports also provides a more detailed discussion of the indicators used, and the data considerations that had to be made when constructing them.

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districts. A second set of measures focuses on inter-state inequity, i.e. differences between states. These measures compare levels of educational resources offered by different states. Intra- and inter-state measures of inequity must both account for variations in costs and purchasing power (U.S. Department of Education, 1998a). For instance, equity measures that might compare New York and Alabama must make adjustments to reflect the significant differences in the cost of living in these two states.

To measure equity, four measures of intra-state and one measure of inter-state inequity are used. Using a recent U.S. Department of Education (1999) report on inequity and data gathered from recent Education Week special reports, the four intra-state measures are defined as dependent variables for each state *i*. $EQUITY1_i$ = Coefficient of variation, the standard deviation of PPE across districts in a state, divided by the mean. A value of 0 means there is perfect equity. $EQUITY2_i$ = Restricted range, the difference between the revenues of the 5th percentile district and the 95th percentile district. This is a measure of the gap between a state's rich and poor districts. $EQUITY3_i$ = Federal range ratio, the restricted range ratio (EQUITY2) divided by the level of funding provided by the district at the 5th percentile. This is another measure that highlights the difference between rich and poor districts. $EQUITY4_i$ = McLoone index, looks at the total revenues for all students below the median and calculates the amount of revenue required to provide those low-revenue students with median revenue. If this value is 1, then there is no inequity in the distribution of revenue. The inter-state equity variable is defined as: $EQUITY5_i$ = Average instructional per pupil expenditures (PPE).[7] Since these measures

[7] Although we have PPE data for 1990-99, the analysis in this paper uses only two measures of per-pupil expenditures (1992 and 1997) because we are re-adjusting the other measures to properly account for cost differences across the states. As seen in the results section, we do not have significant findings with our

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are discussed at great length in each of the NCES reports (1999, 1998b), we do not reproduce that discussion here. While no single measure captures the entire equity picture, considering all five measures prevents us from relying too heavily on any one indicator.

Measuring innovation

If equity is difficult to measure, "innovation" is even more complicated. Since Walker (1969) and Gray's (1973) early studies of innovation in the states, political scientists have debated how best to quantify innovation. When considering "innovativeness," Gray (1973) reminds us that we must consider specific policies, not just policy domains, e.g. education. In other words, states may lead the way in one sort of educational policy, while lagging behind in another. To try and account for this variation, even within policy domains, we consider a diverse set of innovative policies that have passed through statehouses in the past five years.

We consider six innovation variables. $CHT_DENSITY_i$ = charter school density, the percentage of a state's schools that are charter schools. CHT_ENROLL_i = charter school enrollment, measured as the percentage of public school students in a state who are enrolled in a charter school. CHT_LAW_i = strength of the charter school law, as assessed by the Center for Education Reform.[8] $TAKEOVER_i$ = a dichotomous variable taking the value 1 if the state has implemented school district takeover, and 0 if they have

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present measure of PPE. In revising the paper, we will see if the new cost-adjusted data produces new findings.

[8] As stated on their website at www.edreform.com, The Center for Education Reform (CER) is "a national, independent, non-profit advocacy organization founded in 1993 to provide support and guidance to parents and teachers, community and civic groups, policymakers and grassroots leaders, and all who are working to bring fundamental reforms to their schools." The CER (2001) report, *Charter School Laws Across the States*, details how they rank the laws. In general, however, they write that "strong laws foster the development of numerous, genuinely independent charter schools … Weak laws provide fewer opportunities for charter school development." (1).

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not. $STANDARD_i$, a measure of the quality of the standards and accountability programs a state has implemented, as reflected in *Education Week's* overall grade for standards and accountability.[9] $VOUCHER_i$ = a dichotomous variable taking the value 1 if the state has implemented a publicly funded voucher program, and 0 if they have not.

The extent of the change brought by each of these reforms varies widely. Each model of school governance brings with it a unique set of institutional characteristics, which can be understood by categorizing them under management, standards, capacity building, and the incentives for school self governance. As Figure 1 suggests, strands of reform initiatives can be placed along a conceptual continuum. First, reforms vary in terms of their scale, which may range from systemwide to individual level. Systemwide reform includes efforts to build up the capacity of districtwide institutions such as the superintendent's office and his/her central office staff. At the individual level, home schooling allows for substantial parental discretion over schooling practices.[10] In between these two types are the mixed categories of charter schools and state funded vouchers, where parental decisions are constrained by state or district provisions. Second, reforms are differentiated in terms of the balance between direct intervention and market-oriented tools to turn around low performing schools. While home schooling and vouchers are relying on market forces to improve school performance, integrated governance (such as mayoral control) and district-based restructuring focus primarily on standards, accountability, and management tools. Considering reform types across this

[9] This measure considers a state's "adoption of standards (15%), clarity and specificity of standards (25%), quality of assessment (28%), participation in the 2000 NAEP test (2%), and accountability (30%). More details of these indicators and the grading methodology is available from the Education Week Quality Counts 2001 home page at: http://www.edweek.com/sreports/qc01/.

[10] In future analyses, we hope to include data on home school legislation in the fifty states. Presently, however, we do not have this data in our analysis.

spectrum allows us to see if states innovate in one type of educational policy, but not another.

III. Data And Methodology

Two Time Periods

To analyze the relationship between equity and innovation, we divided up the decade of the 1990s into two five year time periods: the first half from 1990-94, and the second from 1995-99. This decision is similar to the approach taken by Peterson and Rom (1990) when setting up their state-level analysis of welfare policies.[11] Similar to the Peterson and Rom analysis, the decision to use five-year sections was made for both theoretical reasons and in light of data limitations. Theoretically, it is assumed that changes in educational policy (whether related to equity or innovation) will not necessarily occur instantaneously in a given year. Rather, we assume that the educational policy-making process can be quite sticky.

In addition to this theoretical motivation, dividing up the 1990s into two time periods is a much better fit for the available data. State-level data consistent over a series of years is often hard to come by.[12] While measures such as population, revenue, and expenditure data are consistently available year-to-year, other important measures are not. Most relevant to our paper are the measures of equity we employ. These measures are not computed annually by the Department of Education, and we turn to previous

[11] Although they set up their data in a similar fashion the method of regression analysis in this paper differs from Peterson and Rom (1990). While we look at only 10 years, they use three time periods, spanning 15 years. They examine results from a pool of their observations, while we also perform separate analysis of our two time periods. This decision was made because several of our dependent variables (charter enrollment, charter law strength, and vouchers) are most relevant only to the second period, 1995-99.

[12] If year-to-year data were available, we might consider an Event History Analysis (EHA). This method is the standard in state policy innovation research (e.g. Berry and Berry 1990, 1992; Mooney and Lee 1995). It has been used to study educational innovations as well (Mintrom 1997, 2000; Wong and Shen 2001).

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reports to obtain our equity measures. For the period 1990-94, we use measures from a NCES report on disparities in expenditures (1999). For the period 1995-99, we use measured calculated by *Education Week* for their annual "Quality Counts" report. While the two sources track many of the same equity measures, there are slight variations in how they measure the indicators.[13]

Other measures are also unavailable in every year. The measure of private schools, for instance, comes from a Department of Education Private School Universe Survey, that is conducted every other year. State-level achievement data is perhaps the worst, as National Assessment of Educational Progress (NAEP) data is only available for 2-3 years out the decade. Grissmer, et. al. (2000) have produced a comprehensive study of this data. [14] Faced with such data limitations, the five-year periods seem more appropriate than attempting to generate proxies for the years in which data was unavailable.[15]

State Level Variables and Data Sources

We have already discussed our state-level measures of equity and innovation, and here we will discuss the remaining variables used in this analysis. All variables are detailed in Table 2. In general, we attempted to gather data in as many years as possible in each of the two 5-year time periods. We then averaged across all available data. In many cases, this meant averaging across five distinct measures. It must be noted,

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[13] The primary difference is that Education Week, when calculating the Coefficient of Variation, adjusts "each district's spending to account for its poor and special education students and the differing costs of hiring teachers and purchasing supplies … [excluding] districts with fewer than 200 students from our calculations and [assigning] special weights to nonunified districts." (*Education Week*, Quality Counts 2002). By using the two time periods, then, we avoid mixing the two measures. In addition, if we find significant relationships in one time period and not the other, we might also shed light on the implications of the different measurement strategies.

[14] NAEP data is also not available for all states, as some states elect not to participate in the NAEP testing.

[15] This would have amounted to using one year of data for other years as well, e.g. using 1993 data as the measure for 1992 and 1994.

however, that in other cases only 1 or 2 years of data was available within the 5 year period. When this occurred, our "five year averages" are in fact averages over less than five values. The details for each variable are included in Table 2.[16]

In all of the regression analyses, the independent variable of interest is $STREV_i$, funding responsibility for each state i. In addition to the equity and innovation dependent variables, we constructed a set of achievement dependent variables. We do not put as much emphasis on the achievement analysis because the data is not available for all states. We use nine measures of achievement: GR4RD = Fourth grade performance on the NAEP, available for years 1994 and 1998. GR4MATH = Fourth grade performance on the NAEP, available for years 1992 and 1996. GR8MATH = Eighth grade performance on the NAEP, available for years 1992 and 1996. ALGEBRA = Scores on the Algebra test administered as part of the NAEP, available for years 1992 and 1996. ADVSCI = Scores on the Advanced Science test administered as part of the NAEP, available for years 1994, 1996, and 1998. SAT = Performance on the SAT.[17] ACT = Performance on the ACT assessment. HSDROP = the percentage of 9th – 12th graders who dropped out of high school in a given year.[18] This is an event high school drop out rate. NOGRAD = the percentage of 16-19 year-olds not in school who have not graduated.

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[16] In many cases, we hope to add data to round out our data across the entire decade. Even at this intermediate stage, however, the database is quite useful for analysis.

[17] In considering both the SAT and ACT scores, we used a method similar to that used by Smith and Meier (1998) and Mintrom (1997). We use a combined reading and math score, and we divide the raw score by the total possible score.

[18] Because state-level data on high school dropout rates is scarce and often calculated using different methods (U.S. Department of Education, 1997) we also tried constructing a "dropout rate index" by averaging three indicators: the percentage of ninth to twelfth graders who dropped out (an event dropout rate) and 1 – the average completion rate from 1991-1999 (a proxy for a status dropout rate). Because many states did not have consistent drop out data, however, this dropout index proved to be ineffective in our analyses.

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We also include a set of political climate variables to capture the party competition and partisan nature of the state house in each year. We employ both the Ranney party control index (RAN4YR), and its four components. The Ranney index was calculated as described in Bibby and Holbrook (1999). As calculated, it is a proxy for the degree to which the Democratic party holds control of the governor's seat, the state House of Representatives, and the state Senate. The Ranney Index takes a value of 0-1, with 1 representing total Democratic control and 0 denoting complete Republican control. We also introduced into our models the individual components (SENATE, HOUSE, GOV, and CONTROL). We considered two versions of the Ranney index, one which was calculated to measure the political environment over the previous 4 years, and another over the previous 8 years (RAN8YR).

Finally, we considered a set of ten control variables to account for additional state characteristics we felt were plausibly related to equity and innovation policies. We considered the following variables. INC = Median family income. ENROLL = Total public school enrollment. PRIV = Percentage of schools in the state that are private schools. ENRPRIV = The number of school-aged children who are not enrolled in public schools. This measure was constructed to serve as a proxy for private school enrollment. EXPEND = The percent of state expenditures spent on education. MINORITY = the percentage of minority (i.e non-white) students enrolled in elementary and secondary schools in each state. FRLNCH = The percentage of students in each state that are eligible for free or reduced-price lunches. REFORM80 = The number of educational

reforms adopted by the state in the 1980s, as calculated by Mintrom (1997). [19] UNION = Teacher union strength. [20]

Regression Methodology

After running some preliminary bi-variate correlation analyses, we moved to more rigorous OLS regression. We considered as dependent variables each of the equity, innovation, and achievement measures. Our final OLS regression model took the form of:

$$DEPENDENT\ VARIABLE_i = b_0 + b_1 STREV_i + b_2 RAN4YR_i + b_3 EXPEND_i + b_4 UNION_i + b_5 MINORITY_i + b_6 PRIV_i + b_7 INC_i + b_8 SAT_i + b_9 HSDROP_i + e_i$$

We ran regressions for period 1 observations, period 2 observations, and for observations pooled over the entire 1990s decade. The following dependent variables were substituted into equation 1 and tested using OLS regression techniques: EQUITY1, EQUITY2, EQUITY3, EQUITY4, EQUITY5, CHTDENS, CHTENROLL, CHTLAW, and STANDARD. All of the achievement dependent variables were run as well, and for those regressions the SAT and HSDROP variables were excluded. Since the other two dependent variables, TAKEOVER and VOUCHERS are dichotomous variables, logit analysis was used in those cases.

Bayesian Model Averaging (BMA) for Specification Uncertainty

In this paper, and in a majority of state politics research, there is significant uncertainty in both the theory and measurement of explanatory variables in the practice of empirical research on state policy innovation. In the sub-field, there is debate over the

[19] We thank Michael Mintrom for generously sharing with us this variable and the union strength variable used in our analysis. For his analysis (1997), Mintrom conducted a national survey of state education policymakers and researchers.

[20] This variable was constructed by Mintrom (1997) via a national survey of state education policymakers and researchers.

questions, "What variables should be included?" and "How should those variables be measured?" Thus, there is a corresponding debate over the "right" or "best" statistical models to employ. This debate can have important implications, especially if the coefficients are significantly different across various models being considered. Given these implications, it is important to try new methods to handle specification uncertainty in state politics research.

This paper turns to Bayesian model averaging (BMA) techniques to handle the model specification uncertainty issue at play when analyzing equity and innovation. This paper uses the techniques as presented by Bartels (1997). The history of BMA (as discussed in Hoeting, et. al. 1999), dates back to Barnard (1963) and was developed chiefly by economists in the 1970s (e.g. Leamer 1978). It has been used in a number of non-political science applications. Since it's introduction to political science by Bartels (1997), however, BMA is starting to appear in published political science articles. Two recent articles in *Political Science & Politics* on the 2000 presidential election have used BMA in the election forecasting problem (Bartels and Zaller 2001; Erikson, Bafumi, and Wilson 2001). It is likely that BMA may gain appeal in other sub-fields as well. As stated by Erikson, Bafumi, and Wilson, "BMA is intuitively appealing because it allows researchers to harness the predictive power of a series of regression models rather than rely on one model alone" (815). Or put another way, 64 or 96 regressions are better than 1. Further, with readable and detailed accounts of BMA provided by Bartels (1997) and Bartels and Zaller (2001), it is an approach that need not remain mysterious. Bartels and Zaller's non-technical description of BMA makes the case for BMA:

> "To understand our argument, it suffices for the nontechnical reader to understand two general principles. First, when plausible alternative models produce different results, it is important to recgonize those differences – and the

> differences in the models that produced them – as a significant source of uncertainty in our statistical inferences, including out-of-sample forecasts. Rather than trusting (and touting) the results of any one model as if they were the final word, analysts should base their conclusions (whether formally or informally) on the range of evidence provided by plausible alternative models.
>
> The second general principle of Bayesian model averaging is that the results of alternative models should figure more or less heavily in this synthesis depending, at least in part, on how well they fit the data. If, by some appropriate criterion, one model works better than another, then the results it generates should be given correspondingly more (though never total) credence. All reasonable models, even those that perform poorly, deserve at least some weight" (Bartels and Zaller 2001, p. 11).

In our analysis, we used BMA to sort through the large set of independent variables we gathered for our data set.[21] Based on BMA results, we selected the final set of independent variables. We then used BMA again to paint a better picture of the actual relationship between our sets of independent and dependent variables. We include these BMA results in tables at the end of the paper, and refer to them throughout the results section.[22] In short, the BMA approach is useful because it a.) provides us with a systematic way of determining how to specify our model; and b.) gives us more confidence that the results we report are not simply the result of one, particular specification.

IV. RESULTS

Preliminary Correlates to State Funding Responsibility

Preliminary bi-variate correlations were run as a first-step to see what other variables are clustered with state funding responsibility. From these correlations (Tables

[21] We assume "uniform model priors" throughout out analysis because we do not have prior expectations for any of our particular models.

[22] Due to space considerations, we do not present BMA results tables for the achievement dependent variables. This decision was also made since equity and innovation are the primary issues this paper deals with, and since the achievement variables are not as well measured as the variables in the other two categories.

3a and 3b), the relationship between state funding responsibility and equity, innovation, and achievement is not immediately clear. There are few significant relationships, and bi-variate correlations without any controls give us little sense of true relationships. One interesting finding from these correlations, however, is the relationship between state funding responsibility and Democratic control of state politics.

In the first period, state funding responsibility is positively related to both of the Ranney party control indexes (4- and 8-year lagged), as well as Democratic control of the House and Senate. In the second half of the decade, 1995-1999, there is a significant relationship between funding responsibility and both the 8-year Ranney index and Democratic control of the state senate. These positive correlations suggest that those states with greater funding responsibility are also states with a strong Democratic presence. This does not tell us about causation (e.g. more Democrats leads to greater funding responsibility), but it does alert us to the importance of considering political dynamics when assessing the results that follow regarding equity, innovation, and achievement. State funding responsibility is also higher in states with higher percentages of minorities enrolled in public schools (Tables 3a and 3b). There was a significant correlation in both the 1990-94 period and the 1995-99 time frame.

Regression Result 1: State funding reduces inequity

Our OLS results show that there is a strong, inverse relationship between state funding responsibility and inequity. Looking only at 1990-94, state funding responsibility is significantly inversely related to the coefficient of variation, the restricted range, and the federal range ratio (Table 4a). In 1995-99, these relationships held again, and there was an additional direct relationship with the McLoone Index (Table 4a). When the

observations were pooled across both periods, these four relationships were again significant (Table 4a). These results are supported by the OLS results produced after using a BMA approach (Table 4b). Averaged over the 512 possible combinations of the independent variables, state funding responsibility is inversely related to the coefficient of variation, federal range ratio, and restricted range (Tables 4b and 4c).

Regression Result 2: State funding does not impede innovation

Our regression results suggest that there is no significant relationship between state funding responsibility and innovation, as measured by our innovation indicators. The only significant relationship between funding responsibility and an innovation indicator was in the 1990-94 period, with charter school density (Table 5a). This relationship, however, when put through the more rigorous BMA approach, did not hold up (Table 5b). This lack of a significant relationship was seen in both periods, and in the analysis of the pooled observations.

Regression Result 3: State funding generates mixed results on student achievement

Our analysis of funding responsibility and achievement remains somewhat preliminary, as our measures of state-wide achievement are not very strong. This has been a limitation to state-level achievement analysis (see discussion in Grissmer, et. al. 2000).[23] Given this important data limitation, it is perhaps not so surprising that when entered as dependent variables, our regression models on achievement produced almost no significant results. There was only one significant relationship, between NAEP algebra scores and funding responsibility, in the 1995-99 and pooled periods (Table 6a).

[23] Although most states have implemented extensive in-state testing programs of their own, it is often difficult to compare this data across states, as the tests and the reported scores can vary quite a lot.

Because the NAEP data is so spotty, however, this single significant relationship tells us little about the broad relationship between state funding responsibility and achievement.

Additional Regression Findings

Although they were not the primary focus of our analysis, the following significant results are interesting to note.[24] We present each result, and offer some commentary on those results which we feel may merit further research.

Related to equity

- For the 1990-94 period, The percentage of minority students in a state is inversely related to the restricted range, and also inversely related to Per-pupil expenditures (Table 4b, also Table 4d). This may suggest that low tax revenues, coupled with high needs, pose a bigger challenge to narrowing the funding gap.
- For the 1990-94 period, The percentage of private schools in a state is positively related to the restricted range (Table 4b, also Table 4d). This may suggest that the competitive private school climate helps gain the attention of the state political leaders to address funding gap;
- For the 1990-94 period, we see the expected relationship: Median family income is positively related to per-pupil expenditures (Table 4b, also Table 4d).
- For the 1995-99 period, Democratic control in the state is inversely associated with the restricted range (Table 4c, also Table 4d). This may suggest that a lack of interparty competition can reduce efforts to narrow the gap. This would be in

[24] We present findings related to the Equity and Innovation variables. The achievement variables produced two additional significant relationships. First, and consistent with the notion that high percentages of minorities are clustered in low-performing schools, the percentage of minorities is inversely related to a number of the achievement indicators (Tables 6c, 6d). Second, higher median incomes are associated with better scores in a number of the achievement categories for the 1995-99 period (Table 6d).

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keeping with V.O. Key (1949) thesis that interparty competition brings about more social funding.

- For the 1995-99 period, the percentage of private schools in a state is inversely related to the McLoone Index, suggesting that a larger private school market is associated with more less equity (Table 4c, also Table 4d). This is also the case when we look at the analysis of the pooled observations (Table 4e).
- For the 1995-99 period, Median family income and the percentage of private schools are both positively associated with per-pupil expenditures (Table 4c).
- For the 1995-99 period, the percentage of minorities in a state is inversely related to per-pupil expenditures (Table 4c).

Related to innovation

- For the 1990-94 period, states which spend a greater proportion of their state's budget on education had stronger standards and accountability policies (Table 5b).
- For the 1995-99 period, higher percentages of minorities was positively associated with percentage of students in charter schools (Table 5c). This suggests that the suppliers of charter schools move to fill the needs of the educational market.
- For the 1995-99 period, a higher high-school drop out rate was positively associated with the percentage of students enrolled in charter schools (Table 5c). This seems indicative of failing public schools.
- For the 1995-99 period, stronger Democratic control was inversely associated with the strength of charter school laws (Table 5c).
- For the 1995-99 period, stronger charter school laws were associated with higher percentages of minorities and stronger private school climates (Table 5c).

- For the 1995-99 period, higher percentages of minorities were positively related to school district takeover (Table 5c).
- For the 1995-99 period, stronger private school climate was associated with stronger standards and accountability measures (Table 5c). This may suggest that in a competitive school climate, states become more results oriented.
- For the 1995-99 period, higher SAT scores were inversely associated with standards and accountability measures (Table 5c). This could suggest that standards are directed at the lower performing schools.

V. CONCLUSION AND POLICY IMPLICATIONS

This paper has presented an empirical analysis of state funding responsibility, testing two key hypotheses: (1) higher levels of state funding leads to a more equitable distribution of education resources, and (2) higher levels of state funding may impede the introduction of educational innovations such as accountability measures, school district takeover, charter schools, and vouchers. This study finds that state fiscal responsibility has served a "redistributive" function (Peterson, 1981; Wong 1999). Higher levels of state funding are significantly related to a narrower gap between rich and poor districts, even when using a set of control variables. At the same time, this study fails to find a significant relationship between state funding and innovation. This study also finds no significant relationship between funding responsibility and achievement. These findings have several implications for state-level education policy.

The direct relationship between state funding responsibility and equity confirms that state governments are the key actors in improving educational equality. Continued

improvements in reducing inequity, therefore, will likely be most effective when states have greater control over K-12 revenue. With a greater share of the revenue pie, state governments are best equipped to redistribute those revenues to the districts where they are needed most. Just as important are our findings that innovation and state funding responsibility are not inversely related. Even states that control large shares of education revenue have been willing to adopt innovative policies such as accountability and charter schools. This is consistent with other research on educational innovation that finds the process of policy innovation is affected by leadership and a host of other variables not captured in a measure such as state funding responsibility (Mintrom 2000).

When these two sets of findings are considered together, the conclusion is positive. States can address both equity and innovation. That achievement was not significantly related to state funding responsibility, however, suggests that the debate remains open over the state's role in education funding.

There also remains much additional analysis to be carried out regarding the relationship between innovation and equity in the states. This paper has provided a step in that direction, setting up a model for empirically testing the proposition. Future research, and further revisions of this paper, must contend with the difficulties stated at the outset: the challenge of quantifying both "inequality" and "innovation," two concepts that are elusive to say the least for empirical researchers. Specifically, measures of innovation must be made more precise. Measures of equity must similarly be measured consistently across the states. With additional data, cross-sectional, time-series methods might also be used.

But given these caveats about more data and more precise measures, the preliminary results presented in this paper suggest that states with greater funding responsibility have not only maintained high levels of equity in their public schools, but have also not lagged behind in implementing innovative reforms such as charter schools and alternative leadership for struggling school districts. States *can* address both innovation and equity.

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Table 1. State funding responsibility over time, as measured by percentage of public elementary and secondary school revenues provided by the state, 1992-1998 [a]							
State	**Average**	**1992**	**1994**	**1995**	**1996**	**1997**	**1998**
All States	48.7	47.7	47.8	48.6	49.4	49.6	49.5
"High Responsibility" States (States 1-10)							
Hawaii	89.8	90.3	90.0	90.2	89.8	89.5	89.0
New Mexico	73.5	73.8	73.6	74.4	73.9	73.1	72.2
Washington	68.5	71.6	69.7	68.7	68.0	67.1	66.0
Alaska	65.7	68.0	67.1	67.5	66.1	63.4	62.2
Delaware	65.1	65.9	64.4	64.3	66.6	64.8	64.4
North Carolina	65.0	63.6	64.0	65.1	64.5	65.4	67.3
Kentucky	64.8	67.0	65.9	65.8	65.3	62.9	61.7
West Virginia	64.0	67.1	64.6	63.6	63.0	63.0	62.7
Idaho	62.3	61.8	60.4	61.2	64.3	63.5	62.7
Alabama	61.0	58.8	59.3	61.0	61.3	63.2	62.5
"Mid to High Responsibility" States (States 11-20)							
Oklahoma	60.6	62.2	58.8	59.4	59.3	62.3	61.6
Arkansas	58.9	59.9	57.8	58.2	60.0	60.1	57.7
California	58.7	65.9	56.2	54.2	55.8	60.0	60.2
Utah	58.2	57.2	54.9	54.3	58.6	62.8	61.0
Mississippi	55.5	53.5	54.5	56.4	57.8	55.5	55.4
Kansas	54.8	42.4	57.8	57.4	57.3	56.2	57.9
Minnesota	54.1	51.6	55.1	52.4	58.2	55.0	52.3
Michigan	53.5	26.6	28.7	67.3	66.8	65.5	66.0
Indiana	52.4	52.9	52.3	53.3	54.3	50.5	51.4
Louisiana	51.8	54.8	53.0	52.1	50.3	50.3	50.4
"Mid Responsibility" States (States 21-30)							
Georgia	51.0	47.7	50.7	50.7	51.9	53.7	51.2
South Carolina	49.6	48.3	46.2	46.3	52.9	52.5	51.5
Wyoming	49.5	50.0	52.2	48.0	51.3	48.5	47.0
Iowa	49.3	47.3	48.2	47.9	49.0	52.0	51.3
Florida	48.9	48.4	49.8	49.1	48.6	48.8	48.8
Maine	47.6	49.8	48.3	47.9	47.0	47.2	45.5
Montana	47.6	41.8	51.4	49.6	48.6	47.4	46.9
Tennessee	46.8	42.2	46.8	47.5	47.9	48.5	47.7
Oregon	46.6	30.6	39.5	46.2	54.1	52.6	56.8
Wisconsin	44.8	39.4	38.7	41.1	42.9	53.1	53.7
"Low to Mid Responsibility" States (States 31-40)							
Arizona	43.6	42.4	41.5	44.0	44.1	45.0	44.3
Colorado	43.4	42.8	43.5	42.9	43.8	44.1	43.4
North Dakota	42.4	44.8	42.8	42.1	42.1	41.4	41.1
Texas	41.9	43.4	40.2	40.2	42.9	40.3	44.2
Ohio	40.7	40.8	40.8	40.0	40.7	40.7	41.2
Rhode Island	40.1	38.5	39.0	41.0	41.5	40.6	40.1
Pennsylvania	39.9	41.4	40.3	40.1	39.8	39.1	38.7

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New York	39.7	40.3	38.2	40.7	39.7	39.4	39.7
New Jersey	39.6	42.2	40.4	38.0	38.6	38.7	39.8
Missouri	39.2	38.0	38.3	38.7	40.2	40.3	39.7
"Low Responsibility" States (States 41-50)							
Connecticut	38.8	40.7	40.3	39.5	38.0	37.1	37.3
Maryland	38.4	38.2	38.9	37.0	38.2	38.8	39.0
Massachusetts	36.7	30.7	34.1	36.3	38.3	39.9	40.7
Nevada	32.9	38.7	32.8	30.1	32.0	31.9	31.8
Nebraska	32.7	34.3	32.7	32.4	31.6	32.1	33.1
Virginia	31.4	31.1	30.8	31.8	31.1	32.5	31.4
South Dakota	30.1	27.0	26.1	26.5	29.7	35.5	35.6
Vermont	29.8	31.6	31.3	29.8	27.8	28.6	29.4
Illinois	28.0	28.9	28.2	28.0	27.3	27.0	28.4
New Hampshire	7.9	8.5	8.2	7.3	7.0	7.4	9.3

NOTES: Table 1 was calculated using data from the U.S. Department of Education, National Center for Education Statistics, Common Core of Data. [a] At the time of analysis, the files from 1993 were under review by the NCES so statistics are not reported for that year.

Table 2. Variable Definitions and Sources

Name	Definition / Description	Source	Years Available
STREV	State Funding Responsibility:	NCES, Common Core of Data	1990-1999
Equity Measures			
COFVAR (EQUITY1)	Coefficient of Variation: the standard deviation of PPE across districts in a state, divided by the mean. A value of 0 means there is perfect equity	For 1990-94, U.S. Dept. of Education 1999; For 1995-99, *Education Week* "Quality Counts" Special Reports	1990-94; 1995, 1997, 1999
RESRNG (EQUITY2)	Restricted Range: the difference between the revenues of the 5th percentile district and the 95th percentile district.	For 1990-94, U.S. Dept. of Education 1999; For 1995-99, *Education Week* "Quality Counts" Special Reports	1990-94; 1996, 1997, 1999
FEDRNG (EQUITY3)	Federal Range Ratio: the restricted range ratio divided by the level of funding provided by the district at the 5th percentile.	For 1990-94, U.S. Dept. of Education 1999; For 1995-99, *Education Week* "Quality Counts" Special Reports	1990-94; 1997, 1999
MCLOONE (EQUITY4)	McLoone Index: looks at the total revenues for all students below the median and calculates the amount of revenue required to provide those low-revenue students with median revenue. If this value is 1, then there is no inequity in the distribution of revenue.	For 1990-94, U.S. Dept. of Education 1999; For 1995-99, *Education Week* "Quality Counts" Special Reports	1990-94; 1997, 1999
PPE (EQUITY5)	Per-pupil Expenditures:	NCES & *Education Week* "Quality Counts" Special Reports	1990-99 [a]
Innovation Measures			
CHTDENS	Charter school density: The percentage of all schools in the state that are charter schools	NCES	1992-1999
CHTENROLL	Charter school enrollment: The percentage of all public school students in the state who are charter school students	NCES	1999
CHTLAW	Strength of charter school law: Center of Education Reform's (CER) assessment of	Center for Education Reform	1999

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Table 2. Variable Definitions and Sources

Name	Definition / Description	Source	Years Available
	how well the charter school law promotes the growth of independent charter schools		
TKOVR	Implementation of school district takeover: Dichotomous (1,0) variable indicating if a state has implemented school district takeover	Constructed by authors	1990-1999
STANDARD	Extensiveness of standards and accountability policies: Grade by *Education Week* on the quality of standards and assessments policies	*Education Week*	1997-1999
VOUCHER	Adoption of a publicly-funded school voucher program: Dichotomous variable (1,0) indicating if a state has implemented a publicly-funded school voucher program	Constructed by authors	1990-1999
Achievement Measures			
GR4RD	NAEP achievement in grade 4 reading	DOE / NCES	1994, 1998
GR4MATH	NAEP achievement in grade 4 math	DOE / NCES	1992, 1996
GR8MATH	NAEP achievement in grade 8 math	DOE / NCES	1992, 1996
ADVSCI	NAEP achievement in grade in advanced science	DOE / NCES	1994, 1996, 1998
ALGEBRA	NAEP achievement in algebra	DOE / NCES	1992, 1996
SAT	Achievement on the SAT, measured as the ratio of the state's average combined (reading and math) score, divided by the total possible score (1600)	NCES	1994-1999
ACT	Achievement on the ACT, measured as the ratio of the state's average combined (reading and math) score, divided by the total possible score (36)	ACT	1994-1999
HSDROP	Event high school-drop out rate: The number of grade 9-12 students who dropped out of school	NCES	1994-1998
NOGRAD	Non-graduates: the percentage of 16-19 year-olds not in school who have not graduated.	NCES	1993-1996
Political Climate			
RAN4YR	Ranney Party Control Index, 4 year lag		1990-1999
RAN8YR	Ranney Party Control Index, 8 year lag		1990-1999
SENATE	Percentage of State Senate seats held by Democrats		1990-1999
HOUSE	Percentage of State House seats held by Democrats	*Constructed by authors* [b]	1990-1999
GOV	Percentage of votes for Democratic governor is most recent general election		1990-1999
CONTROL	Percentage of terms that the Democrats control the state legislature		1990-1999
Controls			
INC	Median Family Income	U.S. Census Bureau, Various Years	1990-99
ENROLL	Total public school enrollment	NCES	1990-99
PRIV	Percentage of all schools in a state that are private schools; This variable was calculated using the NCES' Private School Universe surveys, and dividing the number of private schools by the sum of private and public schools	NCES, Private School Universe	1991, 1993, 1995, 1997

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Table 2. Variable Definitions and Sources			
Name	**Definition / Description**	**Source**	**Years Available**
ENRPRIV	A proxy for the percentage of students enrolled in private schools; Constructed by taking the percentage of	U.S. Census Bureau	1990-99
EXPEND	Percentage of state budget expenditures spent on education	U.S. Census Bureau	1990-99
MINORITY	Percentage of public school students who are minorities, defined as "non-white"	NCES	1990-99
FRLNCH	Percentage of public school students who are eligible for free or reduced-price lunch	NCES	1995-99
REFORM80	Number of educational reforms adopted by the state in the 1980s	Mintrom (1997)	-
UNION	Measure of teacher union strength	Mintrom (1997)	-

NOTES: [a] The analysis in this version of the paper is using only data from 1992 and 1997 because we are re-adjusting the other years' data for proper cost-adjustment. [b] The 4-year and 8-year Ranney indexes were both calculated by averaging four percentages: "the average percentage of the popular vote won by Democratic gubernatorial candidates; the average percentage of seats held by Democrats in the state senate, in all legislative sessions; the average percentage of seats held by Democrats in the state house of representatives, in all sessions; and the percentage of all gubernatorial, senate, and house terms that were controlled by the Democrats" (Bibby and Holbrook 1999, page 93). Because Nebraska's state legislature is nonpartisan, the Ranney index was approximated using only the first component, percentage of popular vote won by Democratic gubernatorial candidate. Multiple data sources were used to determine and verify the make-up of state governments. We primarily consulted *The Book of the States*, published by the Council of State Governments every other year. We also referred to various editions of the World Almanac, the Democratic Governors' Association's on-line election results at: http://www.democraticgovernors.org (accessed May, 2001), Congressional Quarterly's *Campaigns and Elections*, and various Secretary of State offices for official verification. Depending on when a count was taken in a certain year, we found some small discrepancies in the number of Republican and Democratic members of state legislatures. We did not find, however, that these variations produced significant differences in the construction of our Ranney indexes.

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Table 3a. Significant Bi-Variate Correlations between State Funding Responsibility and Political Climate as Related to Equity, Innovation, and Student Performance: Bi-Variate Correlations, 1990-94

	State Funding Respons.	Ranney Index (8 year)	Ranney Index (4 year)	Pct. Vote for Dem. Gov.	Pct. Dems in State Senate	Pct. Dems in State House	Pct. of terms Dem. control
State Funding Responsibility	-	0.31 0.029 50	0.35 0.012 50		0.30 0.036 49	0.29 0.041 49	
EQUITY							
Coeff. Of Variation							
Restricted Range							
Federal Range Ratio							
McLoone Index							
Per-pupil expenditures	**-0.33** 0.017 50						
INNOVATION							
Charter school density (by schools)							
Charter school density (by enrollment)							
Extensiveness of charter school law							
School District Takeover implementation							
Voucher Program							
Strength of Standards & Accountability Policies							
Reforms in 1980s			0.29 0.046 48		0.30 0.040 47	0.29 0.047 47	0.31 0.032 47
STUDENT PERFORMANCE							
High School Drop Out Rate (Event Drop Out)							
HS Drop Out (cohort)						0.28 0.049 49	
HS Non-graduates (1 – avg. completion rate)							
NAEP Adv. Science							
NAEP Algebra							
NAEP, gr. 4 read	-0.46 0.004 39	-0.45 0.004 39	-0.45 0.004 39	-0.32 0.046 39	-0.45 0.004 38	-0.46 0.003 38	-0.35 0.032 38
NAEP, gr. 4 math	-0.35 0.025 41	-0.36 0.020 41	-0.39 0.011 41		-0.44 0.005 40	-0.36 0.021 40	

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Table 3a. Significant Bi-Variate Correlations between State Funding Responsibility and Political Climate as Related to Equity, Innovation, and Student Performance: Bi-Variate Correlations, 1990-94

	State Funding Respons.	Ranney Index (8 year)	Ranney Index (4 year)	Pct. Vote for Dem. Gov.	Pct. Dems in State Senate	Pct. Dems in State House	Pct. of terms Dem. control
NAEP, gr. 8 math		-0.45	-0.46		-0.52	-0.47	-0.32
		0.003	0.002		0.001	0.002	0.041
		41	41		40	40	40
SAT							
ACT	-0.38	-0.52	-0.53		-0.60	-0.58	-0.37
	0.006	0.000	0.000		0.000	0.000	0.008
	50	50	50		49	49	49
CONTROLS							
Minority	0.35	0.43	0.44		0.44	0.48	0.37
	0.013	0.002	0.002		0.002	0.000	0.008
	50	50	50		49	49	49
Pct. State Expenditures on Educ.		-0.31	-0.29			-0.33	-0.30
		0.026	0.041			0.020	0.033
		50	50			49	49
Private School Enrollment							
Pct. Private Schools							
Income							
Enrollment							
Teachers' Unions							

Table 3b. Significant Bi-Variate Correlations between State Funding Responsibility and Political Climate as Related to Equity, Innovation, and Student Performance: Bi-Variate Correlations, 1995-99

	State Funding Respons.	Ranney Index (8 year)	Ranney Index (4 year)	Pct. Vote for Dem. Gov.	Pct. Dems in State Senate	Pct. Dems in State House	Pct. of terms Dem. control
State Funding Responsibility	-	0.30			0.35		
		0.037			0.012		
		50			49		
EQUITY							
Coeff. Of Variation		-0.35	-0.31	-0.28	-0.38		-0.32
		0.013	0.028	0.050	0.007		0.026
		49	49	49	48		48
Restricted Range		-0.40	-0.38		-0.44		-0.38
		0.004	0.007		0.002		0.008

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Table 3b. Significant Bi-Variate Correlations between State Funding Responsibility and Political Climate as Related to Equity, Innovation, and Student Performance: Bi-Variate Correlations, 1995-99

	State Funding Respons.	Ranney Index (8 year)	Ranney Index (4 year)	Pct. Vote for Dem. Gov.	Pct. Dems in State Senate	Pct. Dems in State House	Pct. of terms Dem. control
		49	49		48		48
Federal Range Ratio	-0.32	-0.37	-0.33	-0.31	-0.35		-0.35
	0.024	0.009	0.020	0.032	0.014		0.014
	49	49	49	49	48		48
McLoone Index	0.42						
	0.003						
	49						
Per-pupil expenditures							
INNOVATION							
Charter school density (by schools)							
Charter school density (by enrollment)							
Extensiveness of charter school law							
School District Takeover implementation						0.35	
						0.014	
						49	
Voucher Program							
Strength of Standards & Accountability Policies		0.28	0.28			0.31	0.32
		0.050	0.046			0.028	0.024
		50	50			49	49
Reforms in 1980s		0.30	0.29				0.35
		0.037	0.046				.0.014
		48	48				47
STUDENT PERFORMANCE							
High School Drop Out Rate (Event Drop Out)				0.36			
				0.026			
				38			
HS Drop Out (cohort)							
HS Non-graduates (1 – avg. completion rate)		0.30		0.38			0.29
		0.034		0.007			0.043
		50		50			49
NAEP Adv. Science	-0.39						
	0.020						
	36						
NAEP Algebra		0.29	0.34		0.29		0.33
		0.039	0.017		0.041		0.022

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Table 3b. Significant Bi-Variate Correlations between State Funding Responsibility and Political Climate as Related to Equity, Innovation, and Student Performance: Bi-Variate Correlations, 1995-99

	State Funding Respons.	Ranney Index (8 year)	Ranney Index (4 year)	Pct. Vote for Dem. Gov.	Pct. Dems in State Senate	Pct. Dems in State House	Pct. of terms Dem. control
NAEP, gr. 4 read	-0.45 0.004 39	-0.39 0.015 39	-0.35 0.029 39	-0.51 0.001 39	-0.34 0.033 39	-0.35 0.030 39	
NAEP, gr. 4 math	-0.32 0.039 43	-0.42 0.005 43	-0.37 0.013 43	-0.37 0.016 43	-0.41 0.007 42	-0.42 0.006 42	-0.31 0.044 42
NAEP, gr. 8 math	-0.35 0.028 40	-0.52 0.001 40	-0.49 0.001 40	-0.39 0.014 40	-0.53 0.001 39	-0.52 0.001 39	-0.41 0.010 39
SAT ACT		-0.44 0.001 50	-0.39 0.005 50		-0.48 0.000 49	-0.40 0.005 49	-0.39 0.005 49
CONTROLS							
Minority	0.33 0.019 50	0.40 0.004 50	0.37 0.009 50		0.40 0.004 49	0.44 0.002 49	0.36 0.011 49
Pct. State Expenditures on Educ.		-0.28 0.046 50			-0.28 0.048 49	-0.40 0.004 49	
Private School Enrollment		0.29 0.038 50	0.29 0.043 50			0.29 0.044 49	0.29 0.042 49
Pct. Private Schools							
Income							
Population							
Enrollment							
Teachers' Unions	0.40 0.007 45	0.55 0.000 45	0.50 0.000 45		0.52 0.000 44	0.53 0.000 44	0.52 0.000 44
Free Lunch		0.29 0.038 50	0.29 0.043 50			0.29 0.044 49	0.29 0.042 49

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Table 4a. OLS Estimated Effects of Level of State Funding Responsibility on Resource Equity

	Coeff. of Variation EQUITY1	Restricted Range EQUITY2	Federal Range Ratio EQUITY3	McLoone Index EQUITY4	Per-pupil expenditure EQUITY5
Period 1: 1990-1994					
Coeff.	-0.150 *	-1895.8 *	-0.792 *	0.130	-1376.0
P-value	0.049	0.006	0.024	0.0804	0.127
Obs	39	39	39	39	39
Adj. R^2	-0.018	0.4243	0.052	0.019	0.4251
Period 2: 1995-1999					
Coeff.	-0.114 **	-2070.4 *	-0.729 **	0.072 *	-377.80
P-value	0.004	0.018	0.001	0.011	0.721
Obs	39	39	39	39	39
Adj. R^2	0.199	0.277	0.245	0.292	0.235
Pooled Across Both Periods					
Coeff.	-0.136 ***	-1462.7 *	-0.777 ***	0.115 **	346.7
P-value	<.001	0.025	<.001	0.002	0.7693
Obs	87	87	87	87	87
Adj. R^2	0.1033	0.2813	0.1579	0.1077	0.139

NOTES: Significance Levels: *** = .001 level, ** = .01 level, * = .05 level.

Table 4b. OLS Estimated Effects of Final Set of Independent Variables on Resource Equity, 1990-94, using a Bayesian Model Averaging approach [a]

	Intercept	State Funding Responsibility	Ranney Index, 4 year lag	% Expend. On Educ.	Union Strength	% Minority	% Private Schools	Median Fam. Income.	SAT	H.S. Drop Out Rate
Coefficient of Variation – Period 1: 1990-94										
Coeff.	0.216 *	-0.158 *	0.000	0.008	-0.014	-0.004	0.017	0.000	0.012	0.000
Std. Err.	0.056	0.061	0.006	0.025	0.023	0.007	0.020	0.001	0.026	0.029
95CI	0.105	-0.279	-0.012	-0.041	-0.059	-0.017	-0.021	-0.002	-0.040	-0.056
95CI	0.326	-0.038	0.012	0.058	0.031	0.010	0.056	0.003	0.064	0.056
Federal Range Ratio – Period 1: 1990-94										
Coeff.	0.897 *	-0.784 *	0.007	0.041	-0.063	-0.041	0.148	-0.002	0.027	-0.079
Std. Err.	0.261	0.293	0.030	0.121	0.106	0.042	0.121	0.006	0.115	0.155
95CI	0.386	-1.358	-0.053	-0.196	-0.271	-0.124	-0.088	-0.015	-0.198	-0.383
95CI	1.409	-0.210	0.067	0.278	0.145	0.041	0.385	0.010	0.252	0.224
Restricted Range – Period 1: 1990-94										
Coeff.	2109 *	-2072 *	-19.5	14.5	-260.4	-526.0 *	3751.0*	36.3	-550.5	-11.8
Std. Err.	667.5	583.2	63.3	242.4	217.8	255.5	978.5	26.4	445.3	269.5
95CI	800.7	-3215.9	-143.6	-460.6	-687.3	-1026.7	1833.1	-15.4	-1423.4	-540.0
95CI	3417.4	-929.9	104.6	489.5	166.5	-25.3	5668.8	88.0	322.3	516.5
McLoone Index – Period 1: 1990-94										
Coeff.	0.888 *	0.108	0.004	-0.020	0.002	0.003	-0.007	0.000	-0.042	0.025
Std. Err.	0.056	0.059	0.007	0.027	0.002	0.007	0.014	0.001	0.038	0.036
95CI	0.778	-0.009	-0.010	-0.072	-0.001	-0.010	-0.035	-0.002	-0.117	-0.046
95CI	0.998	0.224	0.018	0.033	0.006	0.016	0.021	0.003	0.033	0.095
Per-pupil Expenditures – Period 1: 1990-94										
Coeff.	4691 *	-1260.3	55.8	66.2	200.6	-751.0 *	302.6	493.9 *	-445.8	325.3
Std. Err.	806.7	814.7	97.8	326.4	289.0	356.2	300.7	119.7	479.6	463.3
95CI	3110.8	-2857.1	-135.8	-573.6	-365.8	-1449.1	-286.7	259.3	-1385.9	-582.9
95CI	6273.0	336.5	247.5	706.0	767.0	-52.8	891.9	728.5	494.3	1233.5

NOTES: [a] These coefficients and standard errors were using Bayesian Model Averaging, assuming uniform priors. All 512 possible model specifications were run, and averages (weighted by how well the model fit) were taken. See the text for a complete explanation of this procedure. * This denotes a coefficient that is significant to at least the .05 level.

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Table 4c. OLS Estimated Effects of Final Set of Independent Variables on Resource Equity, 1995-99, using a Bayesian Model Averaging approach [a]

	Intercept	State Funding Responsibility	Ranney Index, 4 year lag	% Expend. On Educ.	Union Strength	% Minority	% Private Schools	Median Fam. Income	SAT	H.S. Drop Out Rate
Coefficient of Variation – Period 2: 1995-99										
Coeff.	0.158*	-0.117*	-0.017	0.012	-0.011	-0.004	-0.024	0.000	0.059	0.012
Std. Err.	0.045	0.032	0.010	0.019	0.014	0.005	0.017	0.001	0.037	0.022
95CI	0.071	-0.181	-0.037	-0.025	-0.038	-0.013	-0.058	-0.002	-0.013	-0.031
95CI	0.246	-0.054	0.003	0.050	0.016	0.005	0.009	0.001	0.131	0.055
Federal Range Ratio – Period 2: 1995-99										
Coeff.	0.469	-0.730*	-0.087	0.173	-0.019	-0.011	-0.027	-0.004	0.496	0.172
Std. Err.	0.292	0.186	0.055	0.153	0.079	0.023	0.053	0.005	0.273	0.173
95CI	-0.104	-1.094	-0.195	-0.127	-0.174	-0.056	-0.131	-0.014	-0.038	-0.166
95CI	1.041	-0.366	0.021	0.473	0.137	0.035	0.078	0.006	1.031	0.511
Restricted Range – Period 2: 1995-99										
Coeff.	4123.7*	-2592.9*	-1224.1*	-276.1	-128.4	-28.3	43.1	49.6	-7.5	218.4
Std. Err.	779.2	730.0	479.5	445.1	301.5	86.3	204.6	34.2	313.3	479.8
95CI	2596.5	-4023.7	-2164.0	-1148.5	-719.4	-197.4	-358.0	-17.3	-621.5	-722.0
95CI	5650.9	-1162.0	-284.3	596.3	462.6	140.9	444.2	116.6	606.5	1158.8
McLoone Index – Period 2: 1995-99										
Coeff.	0.906*	0.072*	0.000	-0.006	-0.002	0.009	-0.061*	0.000	0.004	-0.013
Std. Err.	0.025	0.025	0.003	0.016	0.003	0.006	0.027	0.001	0.012	0.019
95CI	0.857	0.024	-0.005	-0.037	-0.009	-0.003	-0.114	-0.002	-0.020	-0.050
95CI	0.956	0.121	0.006	0.025	0.004	0.021	-0.008	0.001	0.027	0.025
Per-pupil Expenditures – Period 1: 1990-94										
Coeff.	6516.0*	-615.2	8.7	273.7	-185.6	-1120.2*	2951.0*	247.1*	-817.0	-765.8
Std. Err.	1149.3	974.6	109.7	546.5	407.7	488.9	1162.2	98.2	726.1	848.8
95CI	4263.4	-2525.4	-206.3	-797.4	-984.8	-2078.4	673.0	54.6	-2240.0	-2429.5
95CI	8768.5	1295.0	223.7	1344.8	613.5	-161.9	5229.0	439.5	606.1	897.9

NOTES: [a] These coefficients and standard errors were using Bayesian Model Averaging, assuming uniform priors. All 512 possible model specifications were run, and averages (weighted by how well the model fit) were taken. See the text for a complete explanation of this procedure. * This denotes a coefficient that is significant to at least the .05 level.

Table 4d. OLS Estimated Effects of All Independent Variables on Measures of Resource Equity, 1990-94 and 1995-99 [Coefficient and p-value reported]

	Period 1: 1990-94					Period 2: 1995-99				
	cofvar	fedrng	resrng	mcloon	ppe	cofvar	fedrng	resrng	mcloon	ppe
Intcpt.	0.104	0.614	3036.0	**0.986*** **	**5342.7***	0.133	0.073	**4835.6***	**0.968*** **	**7646.2** **
	0.563	0.456	0.062	**0.000**	**0.017**	0.201	0.900	**0.042**	**0.000**	**0.012**
Strev	**-0.150***	**-0.792***	**-1895.8** **	0.130	-1376.0	**-0.114** **	**-0.729*** **	**-2070.4***	**0.072** **	-377.8
	0.049	**0.024**	**0.006**	0.080	0.127	**0.004**	**0.001**	**0.018**	**0.011**	0.721
Ran4yr	0.007	0.080	-24.0	0.016	338.6	-0.034	-0.211	**-1474.0***	-0.005	62.3
	0.903	0.763	0.962	0.784	0.625	0.270	0.223	**0.035**	0.822	0.942
Exped	0.096	0.412	268.1	-0.185	1373.7	0.008	0.515	-2101.1	-0.097	1602.7
	0.671	0.691	0.893	0.407	0.613	0.952	0.509	0.496	0.330	0.678
Union	-0.015	-0.082	-287.8	0.037	165.07	-0.007	0.007	-204.6	-0.010	-291.94
	0.546	0.482	0.203	0.143	0.587	0.668	0.937	0.549	0.383	0.496
Minority	-0.038	-0.314	-917.9	0.018	**-1575.4***	-0.009	-0.035	-306.6	0.042	-1786.3
	0.496	0.219	0.067	0.740	**0.022**	0.774	0.849	0.675	0.079	0.057
Priv	0.154	1.059	**3698.5** **	-0.208	1752.2	-0.038	0.287	-96.8	**-0.168** **	3716.8
	0.276	0.105	**0.005**	0.137	0.301	0.632	0.524	0.957	**0.005**	0.102
Inc	-0.002	-0.046	75.0	0.007	**417.9** **	-0.001	-0.028	147.0	0.004	274.4
	0.900	0.433	0.506	0.559	**0.009**	0.882	0.396	0.264	0.372	0.100
Sat	0.092	0.047	-2014.9	-0.117	-2517.4	0.109	0.841	-147.1	0.002	-3219.8
	0.675	0.962	0.302	0.586	0.340	0.355	0.209	0.955	0.985	0.330
Hsdrop	0.025	-0.503	261.0	0.133	2225.1	0.057	0.847	1947.0	-0.140	-1798.1
	0.919	0.657	0.905	0.584	0.454	0.727	0.365	0.598	0.240	0.697

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Table 4e. OLS Estimated Effects of All Independent Variables on Measures of Resource Equity, Pooled 1990-1999 [Coefficient and p-value reported]					
	cofvar	fedrng	resrng	mcloon	ppe
Intercept	0.127	0.390	3404.0*	0.971***	5436.9
	0.205	0.425	0.047	0.000	0.083
Strev	-0.136***	-0.777***	-1462.7*	0.115**	346.7
	0.001	0.000	0.025	0.002	0.769
ran4yr	0.004	-0.013	-1734.5***	-0.013	-2127.4*
	0.884	0.925	0.001	0.645	0.022
exped	0.049	0.404	-2029.0	-0.167	-502.3
	0.708	0.526	0.359	0.172	0.901
union	-0.009	-0.031	-246.861	0.013	-129.918
	0.536	0.665	0.321	0.336	0.775
minority	-0.028	-0.178	-282.4	0.031	-1058.1
	0.375	0.245	0.594	0.285	0.278
priv	0.025	0.475	2451.0	-0.159*	5464.3
	0.749	0.211	0.064	0.031	0.025
inc	0.000	-0.028	103.8	0.004	247.4
	0.944	0.367	0.329	0.446	0.206
sat	0.090	0.451	325.9	-0.043	-430.9
	0.441	0.429	0.869	0.692	0.905
hsdrop	0.005	0.110	4112.3	0.093	5262.9
	0.970	0.876	0.096	0.492	0.243
NOTES:					

Table 5a. OLS Estimated Effects of Level of State Funding Responsibility on State-Led Educational Innovation						
	Charter School Density INNOVATE 1	Charter School Enrollment INNOVATE 2	Charter School Law INNOVATE 3	School District Takeover INNOVATE 4	Standards & Accountability INNOVATE5	Public School Voucher Program INNOVATE6
Period 1: 1990-1994						
Coeff.	0.007 *	-	-	0.496	-58.614	-
P-value	0.0301	-	-	0.384	0.151	-
Obs	39	-	-	39	39	-
Adj. R^2	0.083	-	-	0.063	0.052	-
Period 2: 1995-1999						
Coeff.	0.0184	0.0139794	16.141	0.34168	8.5249	-0.264215
P-value	0.4250	0.1176	0.4152	0.584	0.44608	0.5265
Obs	39	39	39	39	39	39
Adj. R^2	0.0535	0.1696	0.2262	0.0965	0.2713	-0.0114
Pooled Across Both Periods						
Coeff.	0.0131	-	-	0.495	-15.694	-
P-value	0.273	-	-	0.230	0.413	-
Obs	87	-	-	87	87	-
Adj. R^2	0.1022	-	-	0.1124	0.0387	-
NOTES: Significance Levels: *** = .001 level, ** = .01 level, * = .05 level.						

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Table 5b. OLS Estimated Effects of Final Set of Independent Variables on State-Led Innovation, 1990-94, using a Bayesian Model Averaging approach [a]

	Intercept	State Funding Responsibility	Ranney Index, 4 year lag	% Expend. On Educ.	Union Strength	% Minority	% Private Schools	Median Fam. Income.	SAT	H.S. Drop Out Rate
Charter School Density – Period 1: 1990-94										
Coeff.	-0.002	0.003	-0.001	0.000	2.69^08	0.0004	0.001	1.8^05*	0.002	0.001
Std. Err.	0.003	0.003	0.001	0.001	2.35^08	0.0004	0.001	5.65^05	0.002	0.001
95CI	-0.007	-0.002	-0.002	-0.002	-1.9^08	-0.0004	-0.001	-9.3^05	-0.001	-0.002
95CI	0.003	0.008	0.000	0.002	7.31^08	0.0013	0.003	1.29^04	0.006	0.004
School District Takeover – Period 1: 1990-94										
Coeff.	0.496	0.127	0.085	-1.166	-0.025	-0.109	0.690	0.015	-0.184	-0.156
Std. Err.	0.519	0.468	0.080	0.597	0.064	0.089	0.360	0.015	0.249	0.270
95CI	-0.520	-0.789	-0.072	-2.336	-0.151	-0.283	-0.015	-0.015	-0.672	-0.685
95CI	1.512	1.044	0.242	0.005	0.100	0.065	1.395	0.045	0.303	0.373
Standards and Accountability – Period 1: 1990-94										
Coeff.	50.093	-26.377	13.000	187.7*	3.033	3.387	4.877	-1.712	-57.417	-1.485
Std. Err.	53.210	36.645	8.956	78.088	13.176	4.704	9.868	1.396	36.815	17.378
95CI	-54.198	-98.202	-4.553	34.645	-22.791	-5.832	-14.464	-4.447	-129.58	-35.546
95CI	154.384	45.447	30.553	340.752	28.857	12.606	24.218	1.024	14.741	32.575

NOTES: [a] These coefficients and standard errors were using Bayesian Model Averaging, assuming uniform priors. All 512 possible model specifications were run, and averages (weighted by how well the model fit) were taken. See the text for a complete explanation of this procedure. * This denotes a coefficient that is significant to at least the .05 level.

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Table 5c. OLS Estimated Effects of Final Set of Independent Variables on State-Led Innovation, 1995-99, using a Bayesian Model Averaging approach [a]

	Intercept	State Funding Responsibility	Ranney Index, 4 year lag	% Expend. On Educ.	Union Strength	% Minority	% Private Schools	Median Fam. Income.	SAT	H.S. Drop Out Rate
Charter School Density – Period 2: 1995-99										
Coeff.	0.009	0.010	-0.016	-0.001	7.0^06	0.015	0.004	0.0002	-0.010	0.077
Std. Err.	0.018	0.018	0.008	0.009	6.0^06	0.008	0.006	0.0004	0.011	0.042
95CI	-0.027	-0.025	-0.031	-0.018	-4.7^06	0.000	-0.007	-0.001	-0.032	-0.004
95CI	0.046	0.046	0.000	0.016	1.9^05	0.030	0.016	0.001	0.012	0.159
Charter School Enrollment – Period 2: 1995-99										
Coeff.	0.002	0.009	-0.006	-0.001	2.3^06	0.010*	0.002	0.0002	-0.007	0.054*
Std. Err.	0.008	0.007	0.003	0.004	1.6^06	0.004	0.003	0.0002	0.006	0.024
95CI	-0.014	-0.005	-0.012	-0.008	-8.4^07	0.002	-0.003	-0.0002	-0.018	0.008
95CI	0.018	0.024	0.000	0.006	5.4^06	0.019	0.007	0.0006	0.005	0.101
Strength of Charter School Law – Period 2: 1995-99										
Coeff.	12.225	9.280	-17.04*	-9.827	7.164	31.624*	30.892*	2.314	-6.094	-2.042
Std. Err.	20.121	18.216	8.189	12.061	7.585	11.990	15.740	1.231	9.519	11.476
95CI	-27.212	-26.423	-33.089	-33.485	-7.703	8.124	0.042	-0.098	-24.751	-24.536
95CI	51.662	44.983	-0.987	13.812	22.031	55.125	61.743	4.726	12.563	20.452
School District Takeover – Period 2: 1995-99										
Coeff.	0.639	0.059	0.092	-1.008	-0.055	0.612*	0.560	0.033	-0.328	-0.005
Std. Err.	0.657	0.541	0.091	0.642	0.162	0.274	0.346	0.023	0.348	0.342
95CI	-0.649	-1.001	-0.087	-2.267	-0.373	0.075	-0.118	-0.013	-1.010	-0.675
95CI	1.927	1.118	0.271	0.250	0.262	1.148	1.239	0.079	0.354	0.664
Standards and Accountability – Period 2: 1995-99										
Coeff.	105.10*	10.455	4.815	-1.329	6.511	3.202	23.315*	0.103	-61.351*	-0.257
Std. Err.	20.302	9.758	3.003	5.201	4.286	2.343	10.580	0.242	24.069	6.075
95CI	65.311	-8.671	-1.071	-11.523	-1.889	-1.391	2.579	-0.372	-108.53	-12.163
95CI	144.894	29.581	10.702	8.865	14.911	7.795	44.051	0.578	-14.176	11.649
Publicly Funded School Vouchers – Period 2: 1995-99										
Coeff.	0.286	-0.297	-0.008	0.011	0.030	-0.131	0.172	-0.007	-0.090	-0.161
Std. Err.	0.305	0.325	0.038	0.153	0.025	0.087	0.142	0.009	0.163	0.252
95CI	-0.312	-0.934	-0.083	-0.290	-0.019	-0.302	-0.107	-0.024	-0.409	-0.656
95CI	0.884	0.341	0.066	0.311	0.078	0.040	0.450	0.010	0.229	0.333

NOTES: [a] These coefficients and standard errors were using Bayesian Model Averaging, assuming uniform priors. All 512 possible model specifications were run, and averages (weighted by how well the model fit) were taken. See the text for a complete explanation of this procedure. * This denotes a coefficient that is significant to at least the .05 level.

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Table 5d. OLS Estimated Effects of All Independent Variables on Measures of State-Led Innovation: 1990-94, 1995-99, and Pooled 1990-99 [Coefficient and p-value reported]

	Period 1: 1990-94			Period 2: 1995-99						Pooled: 1990-99		
	Charter School Density	School District Takeover	Stds. & Account.	Charter School Density	Charter School Enroll.	Charter School Law	School District Takeover	Stds. & Account.	Vouchers	Charter School Density	School District Takeover	Stds. & Account.
Intcpt.	-0.010	0.442	92.2	0.047	0.011	44.3	0.442	**90.3****	0.959	0.000	1.093	69.8
	0.197	0.796	0.346	0.469	0.679	0.440	0.796	**0.006**	0.423	0.993	0.313	0.167
Strev	**0.007***	0.061	-58.6	0.000	0.005	-5.8	0.061	-8.7	-0.048	0.013	0.495	-15.7
	0.030	0.931	0.151	0.990	0.606	0.807	0.931	0.498	0.923	0.273	0.230	0.413
Ran4yr	-0.004	0.224	31.3	**-0.044***	**-0.019***	-29.8	0.224	12.9	0.013	**-0.026****	0.007	11.9
	0.087	0.683	0.321	**0.039**	**0.029**	0.111	0.683	0.199	0.974	**0.006**	0.981	0.423
Exped	-0.010	-1.632	**326.5****	-0.021	-0.003	-33.2	-1.632	63.1	-0.029	0.006	**-2.898***	**169.3****
	0.314	0.451	**0.011**	0.800	0.916	0.645	0.451	0.113	0.985	0.887	**0.042**	**0.011**
Union	0.001	-0.168	0.449	0.005	0.003	5.440	-0.168	5.729	0.174	0.004	-0.154	4.609
	0.323	0.486	0.974	0.597	0.472	0.501	0.486	0.195	0.304	0.363	0.331	0.532
Minority	0.003	0.832	7.5	**0.042***	**0.022****	**40.6***	0.832	11.7	-0.649	**0.019***	0.240	14.7
	0.168	0.121	0.802	**0.041**	**0.008**	**0.026**	0.121	0.224	0.084	**0.049**	0.478	0.352
Priv	0.003	1.815	55.2	0.009	0.006	31.1	1.815	37.5	0.730	0.015	1.018	38.1
	0.587	0.180	0.470	0.860	0.775	0.487	0.180	0.128	0.436	0.544	0.226	0.330
Inc	0.000	0.038	-9.2	-0.002	0.000	3.2	0.038	0.0	-0.098	0.000	0.069	-3.2
	0.600	0.754	0.186	0.634	0.874	0.425	0.754	0.989	0.249	0.895	0.312	0.318
Sat	0.017	-0.119	-202.2	-0.029	-0.009	-18.8	-0.119	-75.0	-1.422	-0.007	-0.257	-95.2
	0.084	0.955	0.095	0.710	0.785	0.788	0.955	0.053	0.332	0.854	0.838	0.108
Hsdrop	0.005	0.210	-23.5	-0.097	-0.010	26.1	0.210	22.1	-1.264	**0.093***	-0.039	-10.9
	0.606	0.929	0.861	0.283	0.782	0.741	0.929	0.607	0.444	**0.042**	0.980	0.881

Table 6a. OLS Estimated Effects of Level of State Funding Responsibility on Selected Student Achievement Measures

	NAEP – Gr. 4 Read	NAEP – Gr. 4 Math	NAEP – Gr. 8 Math	NAEP – Algebra	NAEP – Adv. Science	ACT	SAT	H.S. Drop Out Rate	H.S. Non-grads
Period 1: 1990-1994									
Coeff.	-0.078	-0.033	0.020	0.205	0.330	-0.003	-0.046	0.008	0.004
P-value	0.205	0.669	0.838	0.112	0.075	0.903	0.388	0.871	0.893
Obs	31	33	33	41	41	41	41	41	41
Adj. R^2	0.7086	0.3369	0.2582	0.0045	0.0902	0.508	0.2157	-0.0901	0.3068
Period 2: 1995-1999									
Coeff.	-0.067	-0.048	-0.101	**0.361****	-0.146	-0.011	0.029	-0.061	-0.005
P-value	0.269	0.401	0.166	**0.012**	0.107	0.637	0.555	0.091	0.852
Obs	31	34	31	41	28	41	41	41	41
Adj. R^2	0.5833	0.5741	0.6378	0.2673	0.0781	0.4795	0.1768	0.03208	0.4301
Pooled Across Both Periods									
Coeff.	-0.068	-0.030	-0.015	**0.316****	0.180	-0.008	0.000	-0.026	0.001
P-value	0.099	0.514	0.796	**0.002**	0.128	0.616	0.994	0.362	0.965
Obs	69	74	71	89	76	89	89	89	89
Adj. R^2	0.6595	0.4598	0.4455	0.1203	0.0190	0.5318	0.2324	-0.0036	0.4175

NOTES: Significance Levels: *** = .001 level, ** = .01 level, * = .05 level.

Table 6b. OLS Estimated Effects of All Independent Variables on Measures of Achievement: 1990-94 [Coefficient and p-value reported]

	NAEP Gr. 4 Read	NAEP Gr. 4 Math	NAEP Gr. 8 Math	NAEP Algebra	NAEP Adv. Sci.	ACT	SAT	H.S. Drop Out Rate	H.S. Non-grads
Intcpt.	0.457***	0.210	0.278*	0.141	0.146	0.646***	0.672***	0.060	0.106*
	0.000	0.063	0.046	0.426	0.563	0.000	0.000	0.364	0.020
Strev	-0.078	-0.033	0.020	0.205	0.330	-0.003	-0.046	0.008	0.004
	0.205	0.669	0.838	0.112	0.075	0.903	0.368	0.871	0.893
Ran4yr	-0.016	-0.046	-0.099	-0.070	0.050	-0.050*	-0.036	0.020	0.008
	0.711	0.404	0.152	0.477	0.723	0.014	0.389	0.581	0.748
Exped	-0.043	0.048	-0.002	-0.207	-0.154	-0.064	0.139	-0.107	-0.118
	0.826	0.846	0.995	0.593	0.779	0.404	0.393	0.458	0.224
Union	-0.018	0.011	-0.003	-0.014	-0.031	0.005	-0.019	-0.009	0.007
	0.361	0.640	0.922	0.739	0.617	0.524	0.304	0.581	0.494
Minority	-0.254***	-0.169**	-0.169*	-0.035	-0.373**	-0.073***	-0.033	0.012	0.068**
	0.000	0.004	0.017	0.712	0.008	0.000	0.415	0.725	0.006
Priv	-0.131	0.093	0.015	0.258	0.156	0.016	0.008	-0.015	-0.032
	0.231	0.521	0.932	0.292	0.653	0.748	0.934	0.866	0.602
Inc	0.029**	0.018	0.020	0.020	-0.007	0.009*	-0.021*	-0.004	-0.013*
	0.002	0.129	0.171	0.334	0.806	0.032	0.020	0.612	0.017

Table 6c. OLS Estimated Effects of All Independent Variables on Measures of Achievement: 1995-99 [Coefficient and p-value reported]

	NAEP Gr. 4 Read	NAEP Gr. 4 Math	NAEP Gr. 8 Math	NAEP Algebra	NAEP Adv. Sci.	ACT	SAT	H.S. Drop Out Rate	H.S. Non-grads
Intcpt.	0.370***	0.203*	0.407***	-0.279	0.150	0.651***	0.721***	0.095	0.089*
	0.001	0.021	0.001	0.227	0.273	0.000	0.000	0.108	0.053
Strev	-0.067	-0.048	-0.101	0.361**	-0.146	-0.011	0.029	-0.061	-0.005
	0.269	0.401	0.166	0.012	0.107	0.637	0.555	0.091	0.852
Ran4yr	0.027	-0.034	-0.140*	0.346**	0.089	-0.039*	-0.041	-0.010	0.024
	0.624	0.446	0.026	0.004	0.240	0.043	0.315	0.740	0.293
Exped	0.045	0.236	0.089	0.350	0.414	-0.062	0.034	-0.002	-0.103
	0.840	0.202	0.702	0.505	0.196	0.465	0.857	0.990	0.322
Union	0.017	0.012	-0.024	0.072	0.024	0.001	-0.021	-0.012	0.015
	0.613	0.587	0.405	0.211	0.448	0.946	0.297	0.415	0.197
Minority	-0.188***	-0.138**	-0.177**	-0.031	-0.056	-0.078***	-0.043	0.051	0.075**
	0.000	0.002	0.002	0.794	0.440	0.000	0.316	0.096	0.002
Priv	-0.178	-0.096	-0.092	-0.146	0.035	0.004	-0.144	-0.121	-0.014
	0.171	0.370	0.559	0.614	0.834	0.929	0.169	0.107	0.812
Inc	0.032***	0.032***	0.037***	0.061**	0.014	0.008*	-0.004	0.002	-0.014**
	0.001	0.000	0.001	0.009	0.324	0.023	0.613	0.789	0.003

Table 6d. OLS Estimated Effects of All Independent Variables on Measures of Achievement: Pooled 1990-99 [Coefficient and p-value reported]

	NAEP Gr. 4 Read	NAEP Gr. 4 Math	NAEP Gr. 8 Math	NAEP Algebra	NAEP Adv. Sci.	ACT	SAT	H.S. Drop Out Rate	H.S. Non-grads
Intcpt.	0.435***	0.213***	0.312***	-0.047	0.272	0.649***	0.698***	0.090*	0.100***
	0.000	0.003	0.001	0.758	0.115	0.000	0.000	0.038	0.001
Strev	-0.068	-0.030	-0.015	0.316**	0.180	-0.008	0.000	-0.026	0.001
	0.099	0.514	0.796	0.002	0.128	0.616	0.994	0.362	0.965
Ran4yr	-0.016	-0.062	-0.125**	0.064	-0.041	-0.044***	-0.049	-0.005	0.010
	0.604	0.068	0.006	0.405	0.650	0.000	0.065	0.827	0.502
Exped	-0.021	0.137	0.089	0.026	-0.190	-0.063	0.086	-0.073	-0.115
	0.885	0.369	0.650	0.940	0.621	0.247	0.472	0.446	0.089
Union	-0.008	0.010	-0.010	0.020	-0.015	0.003	-0.020	-0.012	0.010
	0.621	0.523	0.634	0.603	0.717	0.633	0.138	0.274	0.171
Minority	-0.216***	-0.145***	-0.161***	-0.021	-0.227*	-0.075***	-0.034	0.037	0.073***
	0.000	0.000	0.000	0.797	0.016	0.000	0.228	0.109	0.000
Priv	-0.145	0.007	-0.047	0.131	0.144	0.011	-0.071	-0.069	-0.016
	0.075	0.935	0.701	0.516	0.524	0.732	0.314	0.227	0.694
Inc	0.030***	0.026***	0.030***	0.040*	-0.007	0.009***	-0.011*	-0.001	-0.014***
	0.000	0.000	0.001	0.017	0.723	0.001	0.045	0.850	0.000

Figure 1. Institutional Characteristics of School Governance Models						
	Scales of Reform					
	Systemwide Institutions					*Individuall Parents*
Reform Strategies	*Existing Public Schools*	*Districts w/ Alt. Leaders*	*Integrated Gov.*	*Charter Schools*	*State Funded Vouchers*	*Home Schooling*
Management						
Corporate Management (e.g., CEO, info. networking)	x	+	+	x	x	x
Leadership with Diverse Expertise	x	+	+	x	x	x
Reform in Financial Administration & Labor Contract	x	+	+	x	x	x
Restructure Human Resource Practices	x	+	+	+	+	x
Standards						
System wide Academic Standards	+	+	+	+	x	x
Alignment of Curriculum & Assessment	+	+	+	+	x	x
Performance Based Accountability (e.g. Academic Promotion Policy)	+	+	+	+	x	x
Capacity Building						
Sanctions on Low Performing Schools / Students	+	+	+	+	+	x
Support for Low Performing Schools / Students	+	+	+	x	x	x
Instructional Improvement Policy	+	+	+	x	x	x
Efforts to Narrow the Achievement Gap	+	+	+	x	x	x
Incentives for School Self Governance						
Site Based Recruitment of Principals & Teachers	x	x	+	+	+	x
Support Charter School	x	x	+	+	+	x
Options to Contract Services w/ Alternative Suppliers	x	x	x	+	+	x
Strong Parental Preferences	x	x	x	+	+	+

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